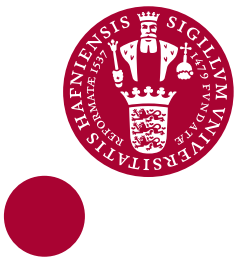

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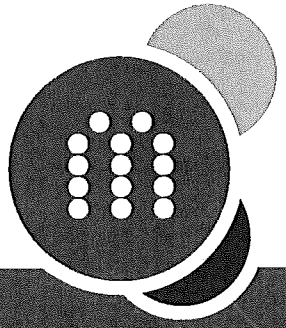
Published in:
From molecule to man: Danish Food Science 2005

Publication date:
2005

Document version
Early version, also known as pre-print

abstracts

LECTURES AND POSTERS



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Regulation of attachment and exopolysaccharide production in Listeria monocytogenes

No. & topic: 2-01, Microbiology
Time: Wednesday, March 9, 14:10-14:30

Anne Gravesen and Susanne Knøchel, Department of Food Science, KVL

The regulation of biofilm formation of Listeria monocytogenes, a persistent pathogen in food production plants, is presently not understood. We have observed a considerable strain-specific variation in attachment at 10°C. Comparison of the same genotype from a given factory suggested that increased attachment potential may develop over time and thereby contribute to persistence. Sub-lethal alcohol levels increased attachment at 10, 20, or 30°C in a majority of the tested strains, while no induction was observed at 37°C. The alcohol-induced attachment was accompanied by enhanced exopolysaccharide production. We have initiated a study of global gene expression during growth with sub-lethal alcohol and the role of candidate genes in the alcohol induction phenotype. Elucidating these mechanisms in L. monocytogenes may contribute to explaining persistence and design of more efficient intervention measures, and would additionally improve the general understanding of EPS production and biofilm formation in Gram-positive bacteria, including starter cultures and spoilage organisms.

Assessment of Listeria monocytogenes pathogenicity using the nematode Caenorhabditis elegans

No. & topic: 2-02, Microbiology
Time: Wednesday, March 9, 14:30-14:50

Line Elnif Thomsen and Hanne Ingmer. Dept. of Veterinary Pathobiology, The Royal Veterinary and Agricultural University

Several bacterial pathogens, both Gram-positive and Gram-negative, kill the nematode Caenorhabditis elegans when supplied as a food source, and a variety of bacterial virulence factors, known to play a role in mouse-models, have been shown also to play a role in nematode pathogenesis. The gram-positive facultative intracellular food-borne pathogen Lis-teria monocytogenes is associated with serious invasive infections in humans and animals. We have investigated the possibility of using C. elegans as a model to analyse the virulence of various L. monocytogenes strains. To follow the fate of the bacteria upon ingestion, we used strains of L. monocytogenes that expresses the green fluorescent protein (GFP) which is visible in the transparent nematode. We analyzed both the ability of the bacteria to kill the nematode and the effect of the bacteria on nematode propagation, but also how well the bacteria adhere to the intestine.